

**CLAIMS**

1. A sensing assembly characterized by comprising a set of turns (2) of an electrical winding coil and an interaction element (3) adjustable by a user, the set of turns (2) and the interaction element (3) being movable in relation to each other, the set of turns (2) being subjected to a sampling voltage ( $V_P$ ) and having a resistance ( $R_S$ )

the sensing assembly being suitable for the use of measurement of a temperature of an environment ( $T_s$ ) and to define the temperature set point of a cooling system,

the measurement of the temperature of the environment ( $T_s$ ) being obtained from the alteration of the resistance ( $R_S$ ) of the set of turns (2); and the definition of the temperature set point of the cooling system being obtained from the inductance ( $L_s$ ) of the set of turns (2), by displacing the interaction element (3) with respect to the set of turns (2).

2. A sensing assembly according to claim 1, characterized in that the set of turns (2) is made from a material the resistivity of which varies with the temperature.

3. A sensing assembly according to claim 1, characterized in that the interaction element (3) is a ferromagnetic material of high magnetic permeability.

4. A sensing assembly according to claim 1, characterized in that the interaction element (3) is an electrically conductive material.

5. A sensing assembly according to claim 1, characterized by comprising an adjustment axle (5).

6. A sensing assembly according to claim 5, characterized in that the adjustment axle (5) penetrates the inside of the ferromagnetic element (3) axially.

7. A sensing assembly according to claim 6, characterized in that the adjustment axle (5) is threaded.

8. A sensing assembly according to claim 7, characterized in that the adjustment axle (5) is operatively connected to a handle (4).

9. A sensing assembly according to claim 8, characterized in that the handle (4) is preferably a knob.

10. A sensing assembly according to claim 9, characterized in that the interaction element (3) is provided with a through-bored and threaded material.

11. A sensing assembly according to claim 10, characterized in that the set of turns (2) is mounted around an adjusting and guiding device (2a).

12. A sensing assembly according to claim 11, characterized in that the adjusting and guiding device (2a) is defined by a cylinder (2b) and bored-through limiting ends (2c).

13. A sensing assembly according to claim 12, characterized in that the interaction element (3) penetrates the inside of the adjusting and guiding element (2a) axially.

14. A temperature set point adjusting and a temperature of an environment ( $T_s$ ) measuring system for a cooling system, the adjusting and measuring system comprising:

- a sensing assembly (1);
- a processing unit (20);

the system (10) being characterized in that the sensing assembly (1) comprises a set of turns (2), an interaction element (3) adjustable by a user, the set of turns (2) and the interaction element (3) being movable in relation to each other, the set of turns (2) being subjected to a sampling voltage ( $V_p$ ) and having a resistance ( $R_s$ );

the system (10) measuring the temperature of the environment ( $T_s$ ) from the alteration of the resistance ( $R_s$ ) of the set of turns (2); and

defining the temperature set point of the cooling system from the inductance ( $L_s$ ) of the set of turns (2), obtained by displacing the interaction element (3) with respect to the set of turns (2).

15. A system according to claim 14, characterized in that the set of turns (2) is made from a material the resistivity of which varies with the temperature.

16. A system according to claim 14, characterized in that the interaction element (3) is a ferromagnetic material of high magnetic permeability.

5 17. A system according to claim 14, characterized in that the interaction element (3) is an electrically conductive material.

18. A system according to claim 16 or 17, characterized in that the interaction element (3) displaces with respect to the inside of the set of turns (2).

10 19. A system according to claim 18, characterized in that the sensing assembly (1) comprises an adjustment axle (5).

20. A system according to claim 19, characterized in that the adjustment axle (5) penetrates the inside of the interaction element (3) axially.

15 21. A system according to claim 20, characterized in that the adjustment system (5) has its surface threaded.

22. A system according to claim 21, characterized in that the adjustment axle (5) is operatively connected to a handle (4).

23. A system according to claim 22, characterized in that the handle (4) is a knob.

20 24. A system according to claim 16, characterized in that the interaction element (3) is provided with through-bored and internally threaded material.

25. A system according to claim 14, characterized in that the set of turns (2) is mounted around a guiding and adjusting device (2a).

25 26. A system according to claim 25, characterized in that the guiding and adjusting device (2a) comprises a cylindrical body (2b) provided with limiting borders (2c) at the end portions.

30 27. A system according to claim 26, characterized in that the interaction element (3) penetrates the inside of the guiding and adjusting element (2a) axially.

28. A method of adjusting the temperature set point of a cooling system and measuring the temperature of an environment (Ts), char-

acterized by comprising the steps of:

- applying a known sampling voltage ( $V_p$ ) to a known value resistor in series with the set of turns (2);

5 - measuring the voltage obtained on the set of turns after a first measurement time ( $t_1$ ) and a second measurement time ( $t_2$ ); and

- determining the resistance ( $R_s$ ) and the variable inductance ( $L_s$ ) of the set of turns (2) from the voltage measurements made at the first and second measurement times ( $t_1$ ,  $t_2$ ) previously determined, and respectively obtaining the value of the temperature of the environment ( $T_s$ ) from the  
10 resistance ( $R_s$ ) and defining the temperature set point of the cooling system from the inductance ( $L_s$ ) of the set of turns (2).

29. A method according to claim 28, characterized in that the step of determining the resistance ( $R_s$ ) and the variable inductance ( $L_s$ ), such measurements are carried out by a processing unit (20).

15 30. A method according to claim 29, characterized in that the step of obtaining the variable inductance ( $L_s$ ) of the set of turns (2) is carried out after passage of the first measurement time ( $t_1$ ) previously determined.

31. A method according to claim 29, characterized in that the step of obtaining the resistance ( $R_s$ ) of the set of turns (2) is carried out after  
20 passage of the second measurement time ( $t_2$ ) previously determined.

32. A method according to claim 29, characterized in that, in the step of detecting the resistance value ( $R_s$ ), a value of a temperature of the environment ( $T_s$ ) is obtained and that, in the step of detecting the value of the variable inductance ( $L_s$ ), the adjustment of the temperature set point is  
25 foreseen.